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OMNIS FERET OMNIA TELLUS. VIRG.

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INTERNAL COMMUNICATION.

The subject of the following letter is highly important; and the manner in which it is treated cannot fail to produce a favourable impression on the public mind. The state of the roads in Virginia, Maryland, and indeed in almost every part of the Southern states, is both disreputable and greatly injurious to the interests of the community. It is the consequence of an illiberal and narrow policy, which generally recoils upon itself, and instead of being real economy becomes a fruitful source of wasteful expenditure. It is therefore to be hoped that the views of Mr. Strode and his friends and associates will be realized, and the objects of their wishes and exertions be speedily attained.

FROM THE ENQUIRER.

Richmond, February 20th, 1811.

DEAR SIR,

With your opinion as to the present condition of our public roads, I readily accord; especially within the County of Culpeper, where the duties of your late office in taking the census of the people, has, I acknowledge, afforded you a recent and full opportunity for the purpose of your just remarks. I do believe the facts you have stated, and also that most of the country within this state lying immediately south east of the Blue Ridge, is in a similar, or perhaps, if possible, a worse condition, and that great inconvenience, difficulties and loss on that account, are sustained by all descriptions of people of this Commonwealth, but more especially by the Agricultural Interest of the middle and upper parts of the country,

whose surplus produce is heavy, and cannot on the present roads, be carried to market during the winter months, by the work-beasts, which were employed in making it.

A bill (whereof I herewith transmit you a copy) for amending "the law concerning public roads," was drawn up and presented to the consideration of the House of Delegates, by Mr. Noland of Loudon, and rejected; which appears very unaccountable. Many gentlemen of patriotic views, on serious consideration, concur on the important subject: all agree that it appears to have been drawn with great judgment, strict accuracy and very uncommon circumspection; particularly, as to the responsibility of the supervisors, and economical saving, keeping the roads in best repair, and more especially with respect to the just equality, with which each individual of every county was to bear his respective share of the expence.

Never was a project better calculated to promote the ease, happiness and general prosperity of this Commonwealth, or to remove the sad grievance, under pressure of which a large portion of its Citizens are in many respects suffering inconveniences, difficulties, hardships and losses; more I believe than any other country now does within the civilized world; the ruinous disastrous effects of which sufferings are chiefly occasioned by the present inadequate and oppressive law; inadequate as to the end and purpose; oppressive as to the unjust, unequal manner in which it imposes the performance of several duties; for it is generally acknowledged and evidently true, that under the direction thereof, the roads have not, nor, indeed cannot, be kept in proper repair, notwithstanding much loss of time is annually expended on them; but so injudiciously applied, as to be of very little or no good purpose.

The present law does not point out the description of men best qualified to be survisors or supervisors, nor do they act under oath; nor do they give security for the faithful discharge of the important trust reposed in them;

nor are they amenable for any loss or damage sustained through their default or neglect; nor have they any pay allowed them; nor have they a transcript of the law to be their guide or authority; nor are they, or the County Courts vested with discretional authority to widen the roads where absolutely necessary; nor have they sufficient power to call out the hands in small parties, to work under them, to repair particular breaches as is frequently needed; nor to compel them to labour when they do appear; nor is the sum of seven shillings and sixpence a sufficient penalty on the owner of each slave or other person subject to work on the roads for non attendance; nor is there any reasonable coercive power in the law to recover that trifling penalty; nor does it point out any mode whereby it is possible to apportion out an equal distribution of the necessary labour; nor is it just that the poor labouring man, having no waggon or other carriage, should be compelled to labour on the roads, when his rich neighbor, having only two male tithable slaves, is exempt; although he may have several waggons or other carriages on the road.

This is both extremely unjust and altogether inexpedient; men of this description, tyrannically forced to attend, will do little themselves, and rather hinder others; to expect any good from the services of a disinterested, reluctant and unrewarded survisor, over reluctant and oppressed labourers, is unreasonable; from such a course, no good is to be hoped or expected; it is most unjust, unequal and oppressive to be pursued under any form of civilized government, much more in our country, boasting of freedom and equal rights!

If those in opposition to said bill, could be induced to consider what it is presumed they never saw, much less ever experimentally felt, the situation of an honest industrious waggoner, probably a good farmer, an useful and valuable member of society, one hundred and more miles from home, on his way to market; his waggon, and as frequently it happens, horses too, plunged in, and almost covered with stiff mire; from which their utmost efforts

cannot extricate them; his provender exhausted, and destitute of money or a friend; in that deplorable situation, he must remain, through perhaps a dreadful night of severe frost and snow, bear the extreme inclemency of the weather, with his poor beasts in the mire, freezing on their distorted limbs, and thus have to wait the approach of day, and the fortuitous coming of some other waggoner to help him out of his perilous distress, or go to some neighbouring farm to implore charitable relief.

The deplorable situation of the Agriculturalists, occasioned by the present system of bad Roads throughout the upland country, whose surplus produce consists entirely of heavy articles, on several accounts is not easily described. They are of course from their habits and manner of conducting their affairs and procuring many of the necessaries of life, annually involved in some debts to their merchants, mechanics, and hirelings, and perhaps for rent, &c. To discharge those claims in due time, their resource in general consists in that of getting their surplus produce to market; which in the present situation of the Roads, they are unable, during the winter months as aforesaid, to do with beasts which made the crop; and if their plantations are forty or fifty miles from market, it will require a very considerable portion, if not all of the profit arising therefrom to hire the waggonage; but even at that extravagant price, they frequently cannot procure it to be done until the winter be past; during which time they are suffering many severe inconveniences for want of the money so to be raised; besides, if it consists of the article of wheat, is subject to many losses and damage; and early in the spring to be destroyed by the weavil. Never will the Agriculturists be able to raise profits from farms thus circumstanced, nor be easy and happy, until salutary laws provide that the Roads be kept in such tolerable repair (I must reiterate,) as will enable the farmers during the winter, to carry their surplus produce to market with the beasts which made it, be they ever so small; and this is the simple but most undeniable fact, which reason and experience concur

in establishing beyond the power of sophistry to contradict.

All which beneficial purposes would have been most completely effected, and all the evils complained of, entirely removed or remedied by passing the forementioned bill, in the forming of which, no pains seemed to be spared in collecting from experience and legal information, every essential to render it economical, useful, convenient, just, equal, and comprehensive, as the nature of the case would admit, or human wisdom advise; so indeed it was and is considered by men best informed on the subject, and most deeply interested in the views it was intended individually to embrace, as well as the general extended welfare and prosperity of this Commonwealth.

I am aware, my dear Sir, that it possibly may be urged that the proposed law will not in its operation, equally benefit every part of the Commonwealth: that will be granted; it may benefit some more than others; but it is most positively reduced to an absolute certainty, that there are but very few, if any, within this state who will not receive considerable benefit by its being carried into effect, and not one single individual, of what description or situation soever they be, that can in any shape be more or less injured by its most rigid operation.

The geographical extent of this commonwealth embracing a variety of soils, climates and diversified situations, bounded in some places by seas, bays and inlets, in others most advantageously interspersed by navigable rivers and inland navigation; while vast bodies of fertile lands very improveable, and much thereof already improved, and cultivated to a considerable degree, by an industrious, virtuous people, who deprived of the advantages of water carriage, seek for an amelioration of circumstances, by praying our legislature to grant them laws for the very important purpose of good roads; and although that when such laws are granted, those bordering on or residing near to navigation, may not be benefitted so much thereby, as those who reside in the more

remote and interior parts; yet as they will not in any case be sufferers by the improvements contemplated in the law asked for; it is astonishing that a single voice should be raised against it; when reason and experience explain to us, that no two parts of the commonwealth are situated so far distant from each other, or, dissimilar in their pursuits, but that each of them is benefitted by the population, wealth and prosperity of the other; more especially, in this case, where the bill so provides that each county shall discretionally levy its own tax, to pay only its own expense.

The present law, to which some inconsiderately are devoted, is but a relique of that feudal system brought over by the colonists on their first emigration from their mother country; and although with several other laws and customs nearly of the same tendency, might have answered the immediate purposes of the first settlers; yet, notwithstanding, under our present happy government, and increased population, they do not by any means quadrate, suit, or agree with the temper, genius, or dispositions of the citizens of this commonwealth, more than they do with strict justice, sound policy, or equal right; whenever a law thus deviates from the strict line of those sacred principles, it must and will be considered odious, impolitic and oppressive, and have a tendency to subvert and dissolve the mutual ties of society, reciprocal benefits, and good order; on which are morally and essentially founded the prosperity and happiness of the virtuous citizens of this Commonwealth.

The expence of making and maintaining in good order the "public Roads" of any country must evidently increase with the annual product of the land and labour, as well as with the quantity and weight of the goods which it becomes necessary to fetch and carry over them; but will not be increased by the operation of the bill in question, which is most evidently calculated to diminish the expence of portage; and to enable the Farmer to perform all his own waggonage without much loss of time or inconvenience; the roads being in proper repair,

the hired waggoner also can afford to reduce his price; in this profit both the agriculturist, the purchaser and consumer will frequently share; besides, it will enable the landholder to send to market large quantities of lumber, slate, lime and many other heavy articles which will not in the present situation of the roads bear portage.

Without an amendment to the present law, concerning public "Roads," the extensive upland country within this state cannot increase in wealth, population, or happiness; in wealth, because they cannot in due time carry their heavy surplus produce over the roads in their present condition to market; in population, because they will emigrate to countries more favorable to carriage; in happiness, as they are deprived of the means of wealth, they will proportionably be deprived of the means of information. It is an undeniable maxim in estimating the value of lands, the produce of which consists in heavy articles, that they are in some degree more or less valuable, according to the goodness of the roads and distance of the way to market; nor is there any subject of more importance, and that requires more the due consideration, the wisdom and patriotic exercise of the powers, of our Legislature, when taken in any point of view, public or private.

Many of the individual inhabitants of the middle and upper counties of this state, for want of tolerable public Roads, are struggling for bare subsistence, with neither time nor money to spare on the education of the rising generation; much less able to provide comfortable establishments for them as they arrive at maturity: of course necessity compels many of them, untaught and unprovided for, to emigrate to a country, where the produce of industry can with more facility be conveyed to market; wealth and the comforts of life for that reason, more easily obtained; the mind from these causes, more at liberty to preserve and procure information, ease and elegance: hence some of the most healthy, prolific counties in this commonwealth have not encreased in white population since the census of eighteen hundred; of

which lamentable truth, your own County is a striking and conclusive example; while the Population of Pennsylvania and some other states possessing but a small portion of the natural advantages of our's, have within the same period, from benefits derived from public improvements, increased in population more than thirty per cent, and in wealth have surpassed us beyond calculation.

Thus, this extensive, fair and fertile country, which has been the peculiar care of a beneficent providence, bestowing on us most bountifully, a middle, temperate, and healthy climate; a soil productive of every article of human subsistence, luxuries, refinements, ease and elegance, which can be produced in any portion of the northern states; & most of all the valuable articles which can be made through every part of the southern extent of the union, and many which cannot be produced in either extreme; yet, from a state of apathy and want of public spirit, especially relating to Roads, the nett proceeds, or profits of the Agriculturalist when brought to market, are but small; for which cause the price and rents of land are diminishing, our country impoverished, unimproved and depopulating!

I am, dear sir,

Your affectionate friend,

JOHN STRODE.

William Banks, Esq.

Of Culpepper County, (Va.)

FROM THE BATH PAPERS.

ON THE MANAGEMENT OF CLOVER.

[By a Gentleman Farmer in Suffolk.]

GENTLEMEN,

As clover is a grass which suits our climate better than almost any other, I think the proper cultivation of it an object of national importance; and therefore take

the liberty of informing you, how I have for several years managed it with great success.

In April, after my barley is come up, I sow about eight pounds of clover seed per acre on it, and roll the land. This answers two good purposes, namely, pressing and covering the seed, and fixing the roots of the barley more firmly, which, in a light soil especially, is of great service.

After the corn is reaped, I omit turning in any cattle till the crop of clover gets up pretty high and thick, which it will generally be by the end of October. I then turn in sheep and other small cattle for about a month, or, if the crop be large, six weeks. After this time, I let it remain unfed till April. My cattle are then turned in, which eat it off pretty bare by May, at which time I clear it for a crop of hay. If the season is not remarkably dry, it will be ready for the first cutting by the middle of June, and generally yields me two tons per acre.

Experience has taught me, that the nearer the ground clover is cut the better, if it be cut early; but if it has stood too long, the bottoms of the stalks will be dry and naked.* In that case, it ought not to be cut so low, as the hay would be more sticky and coarse. If rain follows the first cutting, the second crop will be ready about the 10th of September. The best time is when the flowers are all full blown, and the earliest begin to turn brown.

When I intend the second crop for seed, I usually let it stand till near October. This occasions it to thresh the better, and there is no danger of the seed shedding in the field.

In order to prevent the inconveniences that seed clover is liable to in a wet autumn, I generally leave half my crop unfed in April, by which means it is fit for cutting near a month sooner than it otherwise would be; and the

* To this the writer might have added, that the stalk being drained of its moisture, the root is also much exhausted, and will require longer time before it sends forth new shoots for a second crop.

second, or seed-crop, is brought more into the summer. When the autumn proves wet, this method is attended with many advantages; the seed ripens better, and is threshed with much less trouble and expence. The sample is also better coloured, and the straw, being less beaten to pieces, makes better fodder for my cattle.

The best method I have ever found to prevent cattle from being hoved, as it is here called, or choaked, on their being turned into green clover, is to let them remain at the first no longer than till their bellies are full; and while feeding, to keep them constantly stirring. For as it is their greediness in swallowing the mouth-fulls too fast, and before it is sufficiently chewed, which occasions these accidents; if they are interrupted every two or three mouth-fulls, so as to give time for the balls to sink into their maw before the next follows, it will effectually prevent suffocation.——Whenever, notwithstanding this precaution, any of my cattle have swelled, I have immediately opened a vein, and stabbed them in the flank near enough the hip-bone to prevent wounding the entrails. As soon as this was done, I put a quill or reed into the orifice to keep it open, that the wind might have a free passage out, and keep the animal warm till it recovered its breath. By this means I never lost more than one, and that was occasioned by the remedy being applied too late.

I am, &c.

W. E.

Near Halsworth, May 20, 1779.

FROM THE AURORA.

THE PROCESS OF MAKING IRON WIRE.

The best tough soft iron, such as will weld round, is drawn into rods by smiths, using charcoal fires, and taking welding heats every time the rod is about one fourth of an inch diameter, nine or ten feet long, containing four pounds each, tapered at each end to a long point;

they are first annealed by being brought to a bright red heat, in a furnace excluding the air as much as possible, for if the air can be entirely excluded, no scab will rise in annealing; then these rods are drawn through holes in places formed as follows :—

A bar of iron twenty four inches long, two inches broad, one inch and a quarter thick, is faced on one side with good steel, three-eighths of an inch thick, and punched with taper holes from the iron side, the largest hole just sufficient for the rods to pass through and take the hammer marks off, each hole a small degree less, until they diminish to the finest wire ; six or eight plates will contain the whole series of holes from the largest to the smallest.

The holes are punched in the plates by a set of punches, made of the best steel, beginning the hole with the largest first, then lesser in succession, to taper the hole gradually, until it pass through of the size wanted; a dexterous hand can punch the holes down to one sixty-fourth of an inch diameter, smaller can be drilled.

The plates are rounded on the steel side, and the holes one fourth of an inch asunder in a direct line in the middle, and the holes are regulated with a hammer pointed like an egg, to beat and close them as they wear too large, or lose their proper taper or size in the graduated series; after being closed by hammering round them, a smooth punch of the right taper is driven in to smooth and form them; this punch is driven in first from the steel face side, then again from the back; rammers are also used to clean out and smooth the holes; these plates may be a little tempered by fire and water, but not so much as to make them brittle, or they will not bear the hammer.

The rods are at the beginning drawn through the holes by a pair of nippers fastened to a glide, set to vibrate horizontally about two feet or more, put in motion by a crank and heavy fly wheel driven by water, or any other power, equal to the power of two or three horses ; these nippers open as they push up to the plate, and shut as they draw back. The plate is firmly fixed where the nip-

pers will just reach it, and they close on the wire and draw it through the hole, say two feet at a pull.

The roes may be reduced from one third of an inch to say eight-sixteenths, when the wire will require to be annealed; it may then be reduced to say one third of an inch, when it must be annealed again, and if the iron be good it will now be ready for the cylinders, and may be drawn to the fineness suitable for wool and cotton cards. If it hardens too much it must be left for coarser purposes, for if annealed again it will not harden sufficiently by drawing to become sufficiently elastic for cards. The workmen must discover the quality of the iron, and by experience learn the smallest size at which it will bear its last annealing, to make good elastic wire.

The nippers reduce it to say one eighth of an inch diameter; it then passes to the cylinder which is set perpendicular, to revolve by a spindle like a millstone, so fixed that it can by a treadle be slipped in or out of geer by the foot instantly.

The hank of wire is put on a reel, and the end drawn through the plate, say two feet; it is then fastened to the cylinder, which is set in motion by the treadle, and the cylinder by a proper motion draws it through. The instant it is through, the cylinder is stopped, and the wire wound back again on the reel, and is ready to be put through the next smaller hole, the workmen point the wire with a file, to make it enter the holes as they are lessened, and a cloth dipped in melted tallow is always laid on the wire behind the plate, to grease it to make it slip the more easily through the holes.

This is the process used by the writer when a boy during the American revolution, and so easy was it attained that without any regular instructions from experienced artists, but from only what he could hear from persons who had transiently seen the operation, he so far succeeded as to make as good iron wire as ever was imported, and to work it into as good wool and cotton cards, of which he made thousands of pairs; so that he can from experience say, that the American iron will make good

wire, and he has no doubt of the success of the manufacture, if attempted with perseverance, and supported by a protecting duty on the importation of the article.

O. E.

ON HEDGES.

BY THOMAS MAIN, OF GEORGETOWN, POTOMAK.

"Mankind are all disposed to take the shortest road that leads to the object of their desires, though it is frequently not the best; and it may be expected that many of those who have planted or intended to plant live hedges in this country, will be impatient to have them in perfection as soon as possible, or perhaps sooner than nature, assisted by all the efforts of art, has decreed that they should be so gratified. For the purpose of rendering half grown hedges fencible, many ingenious contrivances will, no doubt, be invented hereafter. Such ideas as have come across my imagination to favor this end, shall now be freely communicated, leaving others to add thereto at their leisure.

Method of rendering a young Hedge impervious to Black Cattle.

"Our cattle being accustomed to go at large, and used to pushing their way through brakes and thickets, we can only expect to debar them by live fences, through sheer strength of the plants which compose the hedge; for if they possibly can divide it with the help of their horns, some of them will undoubtedly, at times, try to force themselves through, without much regarding the spines of the common haw thorn, which would do little more to a strong steer than to tickle his tough hide—but in order to check his progress, and keep him on the outside, or keep him in it if his owner should choose to have him there confined, it will not be difficult nor expensive to assist the young hedge in the following manner.

"When a hedge is four years old, let the top of it be trimmed at the proper season, to about three feet, or three

feet and a half from the ground, a number of neat rails, or seasoned poles, sufficient to run the whole length of the hedge, being provided, these are to be laid one after the other, singly along the top, exactly in the middle thereof, their ends being lapped past each other and tied together with a piece of hickory bark, or some such cheap and ready ligature, the stubbs of the shoots will easily support them there until the new growth secure them in their place. The hedge being annually trimmed as usual, in two years the rails will be found enclosed in the very centre of it, so that any animal of a large size that may attempt to push its way through, will find it impracticable to divide the hedge.'

Method for excluding Hogs.

"When the old protective fence seems to be on the decline, while the hedge has not yet attained sufficient strength or closeness to keep out pigs or hogs, that are permitted to go about without yokes, the hedge may be strengthened to resist them by driving a short stake about two feet long in the vacancy betwixt each two of the plants; if these stakes are sufficiently durable to continue firm for two or three years, the hedge will probably, at that period, be strong enough itself to keep hogs out.

"Another method to effect this purpose, may be commenced when the hedge has completed its second year, or when the stems of the plants nearest the ground have attained the size of a person's thumb; then just before the bud begins to open in the spring, let the whole hedge be cut off by a saw, to within an inch and a half of the surface: the cultivation being continued as usual, the shoots that will arise from these stubbs will run up to four, five, or six feet the first season, and will be so numerous and full of thorns, that the hedge will in a few years be completely closed at the bottom; the trimming being annually attended to as before directed under that article.—But it is to be observed that these strong shoots are at first easily disjointed from the stocks, and, therefore, cat-

tle of every description must be carefully kept from them until they are out of danger.

"A better way than either of these can be executed, when the field enclosed is incommoded with stones.—Having the hedge course ploughed and harrowed level in the spring of the fourth or fifth year, the stones are to be gathered from the land, and the largest ones first laid along side of the hedge; having marked a space in width, proportioned to the quantity that can be had, or is capable of containing as many of them as are deemed sufficient, they are to be laid somewhat regular, so as to form a sort of loose pavement or diagonal wall, with its upright face about fourteen inches high, bearing against the stems of the plants. The interstices among the large stones may be filled up with the smaller, so as to close every opening against the growth of weeds or other perenial plants.

"This will not only be an excellent barricade against swine, but will also tend to enrich the soil and promote the growth of the hedge; but it must not be attempted before the stems of the plants at the surface of the ground have acquired the size of a stout walking cane, as the stones will harbor field mice and other animals that would gnaw the roots of small plants, but will not trouble such as are of the size mentioned.

"Where stones cannot be obtained, another method may be taken to close the bottom of a hedge. After a course of flat rails, similar to those that are used in post and railing, are fixed along the inside, with their faces bearing against the hedge, and raised a few inches from the surface—held in their places by small stakes or other simple contrivances—a mound of earth is to be piled up in a sloping bank to support them—having first ploughed a narrow stripe at a little distance from the hedge course, the more easily to procure mould for the purpose.

"This mound would rather be of benefit than detriment to the hedge, although if both its sides were to be banked up to any considerable height, it might kill it en-

tirely; for there are few plants that can bear to be set much deeper in the ground than they grow naturally, but when the earth is elevated on one side only, the hedge will suffer no injury therefrom, and will thus appear planted on the side of a bank without any ditch."

IMPENETRABLE STUCCO, AND PERPETUAL CEMENT.

This important native addition to the arts is the invention of Mr. Morneveck, of the city of N. York, who we recollect, obtained a patent for it some two or three years ago: so, far then it has stood the test of time; and thus far we are enabled to judge of its use and practicability, and to pronounce it a most valuable acquisition. In a late N. York paper there is a communication concerning it, from which we shall select here its most important features, adding, as we proceed, such observations of our own as appear to be worthy a place under our head of "Useful inventions, &c."

The elegant country house of Mr. Cheeseman, at West-Chester, having a "decked roof,"* was last January, amid the severities of winter, covered with this Stucco Cement—and offers a proof to the most sceptical mind, that no time or season of its application can defeat its salutary end, provided neither snow nor rain storms happen at the time of applying it. A Mr. Hogan of N. York, merchant, has also availed himself of this combination of beauty, security and durability, for the roof of his elegant building on the Bloomingdale road, near Manhattanville. The roof is a *heptagon*, a form

* That is having a trifling convexity of form—Chymists, Dyers, &c. will instantly perceive, that an application of this stucco to their vessels might be made with beneficial effect; since their corroding acids can produce no impression upon it, provided it be laid on while the vessels are dry. The security which houses, whose roofs are thus covered, acquire against *fire*, is a consideration of incalculable importance.

which receives the stucco with as great facility as any other.

During the month of March the flat roof of the large and handsome mansion of Gouverneur Morris, esq. at Morrisenia, was in like manner successfully covered with this stucco.

The writer of the above communication adds (and we deem it a property of no mean importance) that during the heaviest snow storms of the last winter, Mr. Hogan's house thus covered, would receive no snow, tho' every other building, in the neighbourhood, was covered with it, from 9 to 12 inches in depth. Give Mr. Morneveck, says he, a solid foundation for the application of the stucco, and it will stand almost forever. In support of this position, he refers to the examination of the porch of the Rev. Mr. Middleton's church, which was covered above two years ago, and on which neither "the rude hand oftime," nor the attacks of varying elements, have produced the slightest effect. Last summer another flat roof † was covered in this city, and which has completely answered the object.

The present improved state of the stucco is such, that it has neither taste nor smell. Even the application of the stucco has undergone a total alteration: it becomes hard and dry the very day it is laid on, and communicates no flavour whatever to the rain water. To ascertain the fact beyond contradiction, two wooden boxes were constructed and covered and lined with the impenetrable stucco. They were filled, the one with pure rain water; the other with aqua fortis. Standing untouched, for six weeks, they were then emptied, and I can aver (says the writer) that their contents were as free from any colour, derived from the stucco, as when first poured in. This proves that, so far from injuring rain water,

† We contemplate, with pleasure, the dawn of *good taste* now spreading over the United States. Covered with a proper cement, the superior cheapness, durability, convenience and security of flat roofs, cannot be questioned, but by the dullest and most tasteless minds.

this stucco might be used to the best advantage for preserving it pure, by lining and covering cisterns; provided the composition is applied before they are set in the ground—for, as already observed, the material must be dry when the stucco is applied. When it is intended, therefore, to apply it to cisterns already sunk in the ground, they must first be taken out and made thoroughly dry.

Some, it seems, have objected to the nativity of this invention, on the ground, that an eminent artist who accompanied Ld. M'Cartney in his embassy to China, affirmed, that he saw, in Pekin, the emperor's palace covered with impenetrable stucco and perpetual cement, as a positive non conductor of the electric fluid‡. The originality or discovery of an invention may, however, be claimed, with equal justice, by different nations, without the inventors or discoverers having any knowledge of, or intercourse with each other.

The writer of the original article concludes with an observation, which we have anticipated in substance in a note below. "As this stucco," says he, "answers to cover deck roofs on land buildings, persons of the least reflection will see that of course it must be equally efficacious for covering the decks of ships; and in particular that part of them which is the most exposed, and technically termed between wind and water."

Since the above writer has omitted (and we think it a serious omission) to state the cost of this composition, we here subjoin a Recipe for another, of at least equal

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‡ In this we see (or think we see) a clue to the invention. The Chinese junks are all coated, or payed (to use a sea term) inside and out, with a simi ar composition—which supercedes the use of pitch and tar; but with this superior advantage, that it communicates neither smell nor stain to persons or things. The same substance is used throughout the East Indies, as an exterior plastering to the walls and roofs of buildings of every description. It is white, hard and durable, and receives a polish from the trowel, which gives it the appearance of chinaware. It is there known by the name of *chunam*.

durability, and no less impervious to the weather. The expense of materials, and the hands employed in its application may easily be calculated.

RECIPE FOR A PERMANENT IMPENETRABLE CEMENT.

Take one bushel of strong unslacked lime (shell lime best) and from 4 to 4 1 2 bushels of coarse grained sand, clean washed. Incorporate them intimately together; Slake the lime in the sand by piece-meal, beating them well up. Add to, and incorporate with, the mixture about a pound of muscovado sugar to each hundred pounds of the mortar—and, while hot, spread it with a trowel over the roof &c. designed to be covered, of a proper and equable thickness: for a flat roof, an inch or inch and half thick (or more) according to its extent. When thus spread, it will become fixed in a few minutes, and acquire the hardness and durability of the hardest stone. In a few hours, one plasterer could cover the largest building in the Ohio—but there must be five tenders to keep him in constant supply with the hot mortar, or composition, as it will not unite with parts that have become fixed. When designed for a roof, it ought to be laid on a foundation formed of joints about a foot apart, well braced to keep them steady, and covered over with plank (that of Kentucky boats as good as any) partially severed in longitudinal parrallel lines, by a hatchet, at an inch or two apart, to give the composition or cement, a firm hold. It is supposed that the expense of such a roof, would not exceed a fourth part of a pitched shingle roof: further advantages are, 1. It needs no repairs; 2. It is proof against fire, and 3. adds to the appearance of the building, besides affording an agreeable walk at top.

WOOL.

The French, Spaniards, and English, separate their fleece into three sorts, viz. 1. Mother wool, which is that of the back and neck. 2 The wool of the tails and legs. 3. That of the breast and under the belly. They are therefore divided into the prime, second and third

qualities; and the Spaniards, in packing it, mark each bag with a capital letter, denoting its quality. If the separation be well made, fifteen bags will be composed, of twelve marked R. which is used to denote the prime; two marked F. for the second, and one S. for the third quality. By an arrangement of this kind, which appears to be the most correct, each sort will be readily known.

The ancients, we are told, valued the wool of Attica, Megara, Laodicea, Apulia, and especially those of Tarentum, Parma, and Alteno. In those days we are assured, by Varro, it was the custom to preserve the fleece, by clothing their sheep with skins.

Since the introduction of the valuable Merino breed into our country, whose fleece is acknowleged of so superior a quality, we entertain a hope, that their number will increase, and every means be taken to facilitate their growth in all the states of the union. Indeed, where the manufacture of woollen goods will become the staple commodity, and must eventually place our country in a situation to supply all our home consumption, the cultivation of so valuable an animal as the sheep cannot fail to strike the attention of the patriotic citizen. With a view to their security, the race of dogs should be extirpated, or at least heavy taxes should be laid on them in every state. The following particulars relative to this useless animal, in this point of view, taken from a late Lynchburg (Virginia) paper, will shew that the maintenance of, and the losses by dogs, is a matter of serious consequence.

The number of dogs in Virginia are 188,000, which require as much provision to support them as would raise 188,000 hogs, worth 940,000 dollars, and that they kill sheep to the amount of 564,000 dollars. The conclusion is, that in the support of dogs, and the losses sustained by them, 1,504,000 dollars would not cover the expences. If, then, so amazing a sacrifice is made by this animal (which we take on the authority of that paper) how great, it may be asked, must be the loss sustained in other states?

The next consideration is, after viewing the importance of the rearing of sheep, the best mode of manufacturing the wool into useful fabrics. The picking, scouring, &c. also require some attention. The scouring of wool, as it is done in England (by means of fermented urine,) and other parts of the world, with general remarks on the various breed of sheep, is given at full length by Dr. Mease, in his Archives of Useful Knowledge, a work which promises much to the agricultural and scientific reader. The doctor's "observations on sheep" are peculiarly adapted to our country.

Urine in a putrescent state, by which the uric acid is destroyed, or at least enters into combination with a product which is formed, is in some degree decomposed, and ammonia is formed in a free state; which, when it is now used for the scouring of wool, readily combines with the greasy matter, and carries it off.

It has been an observation long since entertained, and I think the fact is confirmed by experience, that urine obtained from prisons, hospitals, &c. is more adapted to the purpose of scouring, than that usually obtained from other places.

The spinning, weaving, and some subsequent processes, are, in this country, in as much perfection as in any part of Europe. But there is one circumstance, which is the principal complaint, that of dying the cloth with permanent colours. The colours, however, are generally good; but the manipulation of the process, particularly in the *fixing* of the dye, by employing proper mordants, is a subject that ought to be attended to Some colours are dyed in as much perfection as in Europe; but, some practical dyer, who has been brought up in one of the extensive dying manufactories of England, where every art belonging to the process may be learnt, is wanted in this country.

In the preparation of cloth, or in laying the wool, after the dying operation, is also another objection.

There is a gentleman in the neighborhood of this city, who is well acquainted not only with the practical, but

the thoeretical part of dying (from his long residence in a manufactory of this kind) and who, from the specimens of his dying (which are all numbered and marked in his books according to the processes he employed in the manufactory) must be acquainted with every circumstance necessary to be known in extensive works.

"Our forests yield some plants, which, as dies, are not excelled; and surely by an attention to so interesting a subject, as the native dies of our country (of which our aboriginals have given proofs, even in the days of the illustrious PENN) are most undoubtedly of much importance in connection with our woollen and cotton establishments.

The Linnean society of Philadelphia, appreciating the importance of the establishment of arts and manufactures, by which only we can be rendered really independent, have offered their services, in a scientific way, to examine not only the native dies of our country, but plants, ores, &c &c. and I have no doubt from the knowlege possessed by the gentlemen composing that society, who are the first literary characters, of which our country can boast, if their proposition be accepted, the examination of such substances which afford dies, will be carefully made; and such experiments made either with respect to the mordant or otherwise, as the subject would require.

This important branch of the woollen manufacture which has engaged the ablest chemists and practical men of France and elsewhere to discover new dies, new mordants (to fix the coloring substance) and new processes throughout, ought, in our country, where native dies are more or less found, to engage the attention of the enlightened citizen; for in so doing he unquestionably adds his mite to the great scale of internal improvement.

AMERICANUS.——AURORA.

MERINO SHEEP.

As the laudable spirit of improvement, and a patriotic regard to the prosperity of the country undoubtedly co-

operating, has stimulated numbers of our farmers to the purchase of Merino sheep, at great prices; it may be of use to them and the public, to transcribe from an English publication, the remarks of one whose experience and judgment seem entitled to great weight.

The writer addressing the Board of Agriculture (see vol. 6, part 1st of communications o them) observes, that he had been anxious to ascertain what degree of perfection might be produced in the English wool, by means of the Spanish cross on fine woolled sheep of their own.—To be satisfied whether under the common circumstances of the husbandry of the country, such wool would retain its fineness. He had been largely engaged in the manufacture of superfine cloth, and in the practice of buying and working up very considerable quantities of Spanish wool.

In the year 1800 he sent twenty ewes (selected for their fine wool) to a Spanish ram, received from his Britannic majesty's Merino flock.

In the produce of the first cross he found a surprising improvement in the wool, partaking very strongly of the nature of the Spanish, and fairly to be considered as having approached half way. He carefully preserved a large specimen, to ascertain the important fact of its future deterioration. The weight of the fleece was increased one half by the cross with the Spaniard.

In 1801 he pursued the experiment still farther, and observes on picking out ewes for his purpose, from a great number, he could scarcely see one in twenty that he would choose. This care and judgment should be well observed.

In 1803 and four he purchased a considerable number of ewes from a reputed Spanish flock. The race had been engrafted on the common breed without due care in choosing the finest, and were found a very mixed and unequal breed. The least degenerated, very little, if at all, inferior to his majesty's pure breed.

In 1805, from the increase of his flock, he disposed of all the first common ewes, and at shearing found the

average weight of his fleeces 2 3 4 lbs. washed on the sheep's back.

In 1806 his Spanish and mixed flocks amounted to nine hundred and eighty-six, exclusive of lambs, and the average weight of fleeces three pounds washed as above.—The value of the different crosses, thrown together at 4s 6d sterl. or a dollar per lb. The Spanish at a dollar and a half. But this wool was not so high that year as in some others.

He observes, it was found expedient to wash the wool on the sheep's back; for though the wool of the real Spaniard, is so close and compacted together as to admit but little impression in the grease from common washing, yet the dirtier part of the fleece near the surface is considerably cleaned, and the more yolky and pure grease yields easily to the usual process of the manufacturer. The process of shearing is also much facilitated by washing on the sheep's back, which is otherwise very tedious and difficult. Though this is not the Spanish mode of cleaning the wool, yet it is preferred. It is in the most merchantable state; to scour it clean after it is shorn would probably injure its softness and quality.

His first reflection on the adoption of this breed of sheep is, whether it is likely to be advantageous to the country; and he gives a decided opinion that the judicious culture of fine wool, must be productive of the greatest benefit to the agricultural, as well as commercial interests: that in the great variety of soil and situation, there are numberless tracts, where this breed may be cultivated with the great st success, to the expulsion of the wretched and unprofitable flock that now infest them; that there is not a breed of clothing woolled sheep, which would not produce a fleece from four or five repeated crosses with the Spanish, worth a dollar per lb. washed on the sheep's back. It seems the interest of the farmer and community, that poor hilly mountainous tracts of land should be applied to the growth of this sort of sheep. As to the more rich and cultivated lands, he is of a different opinion, they should be left in possession

of the large and long woolled flocks which thrive so well in them. He is satisfied they would not be so well adapted to the culture of the Merino fleeces, the main object of which is the fineness.

The comparison of four years successive produce from the same sheep has satisfied him, that without extraordinary care to guard against the effect of climate, and a strict abstinence from the more nutritious and succulent kinds of food, the wool of the mixed breeds, will materially degenerate. He proves it by instances of sheep kept on rich pasture, and fed with turnips, vetches, &c.

He found the wool of his majesty's ram much degenerated from the specimen of 1803 He had been kept on the best pastures in summer and fed with grain in winter; as well as hard worked. There was not such a depreciation in the wool of the female produce from the ewes of his majesty; they had not been kept in such high condition, and their fleeces were as fine as those of the original ewes.

In the pure Spanish breed there is a wonderful capacity for resisting the effects of climate on the quality of wool; and it may be added on the animal itself. The extreme exudation (perspiration or sweat) from the body of the animal, yielding a yolky consistence at the interior of the fleece, and by its mixture with the soil, forming a kind of coat of mail on the outside impervious to wet, and protecting the sheep from injuries of climate. The same quality attends the mixed breed in proportion.

In the cold and mountainous tracts of Saxony, with the precaution of proper feeding and housing from the inclement season, the mixed breed retains the greatest possible degree of fineness. The best wools from that country equal in smallness and fibre, and exceed in softness, the finest wools of Spain; being eagerly purchased at even higher prices by the manufacturers of England.

That the cross with a coarser wool should have produced a softer and a finer wool than that of the parent fleece, is an extraordinary fact, but we now know it to be true from the indisputable fact of the Saxon wools.—

Much of this softness is attributed however to the management in washing. It is done on the sheep's back, and the grease remaining after it is shorn, preserves it from the hardness, which the Spanish practice of using hot water, then cold, drying in a burning sun and close pressure in packing, occasions.

In Saxony they house the sheep regularly when the frost sets in. They protect them from the effects of humidity. When it is wet, or even a thunder storm approaches, they drive them to shelter. Their pasturage is on the highest mountains and forests, for the sake of dry and healthy herbage; considering the luxuriant food of the low lands and meadows, detrimental to the fineness of the wool. They feed them only on hay in the winter months, except in a few instances where a cake of oat meal and salt is used. Turnips, succulent vegetables, &c tend to enlarge the size of the animal and produce a corresponding coarseness in the hair. The weight of the Saxon fleeces connected with their fineness corroborates the opinion, as their average is not more than two pounds.

In Sweden the same result appears. The Spanish breed is in high perfection and their wool extremely fine. From the severity of the cold they are housed six or eight months, and have even been clothed.

Some modern writers, and particularly Mr. de Lastryrie, have asserted that the quality of wool does not depend on the pasturage. But they are not supported by fact or reason. Instances are already given of the fine wool from the more spare fed flocks. And it is observed, the flock of the Prince of Peace, formerly in highest estimation, but which was privileged to feed first on the finest pastures in their way to the mountains, now produces a broader and coarser pile of wool, and at present ranks with the lowest of the prime Leonese piles for fineness. The sheep are however large and handsome.

The sheep are not from cross with the Spanish, less healthy. As lambs they are tender, and it is necessary the ewes should yean as late as the month of March—The lambs fall very naked, and must be sheltered from

bleak and cold situations. After shedding their lamb's teeth they are as healthy and strong as any sheep whatever. They keep themselves in good order upon bare pastures, go well to fold, and fatten handsomely. Upon the fattening of the sheep, the wool increases as well as their size; and the flesh has brought a penny per pound more than the market, from the beauty of the meat, and its great fatness. Balt. Pap.

CULTURE OF POTATOES.

A member of the Agricultural Society of Greenock, made the following experiment:—"The first year," he says, "I cut the potatoes in three pieces, the top, the middle and the bottom parts, and planted these in three rows—The top plant was ten days earlier than the middle plant, and much greater crop; the middle plant was earlier than the bottom, and a better crop; the bottom produced but a very indifferent crop. For some seasons past I have only set the top eyes, and I believe have the best crop and driest potatoes in the country, nor do I think there is any waste in doing so; for I find the potatoe keeps the better by having a cut taken off it."

Parpoutier, a celebrated French chymist, has discovered a new species of utility, besides its nutritive powers, in the potatoe; and his discovery has been proved in England by stucco plasterers. From the starch of potatoes, quite fresh and washed but once, a fine size, by mixture with chalk has been made, and in a variety of instances successfully used, particularly for ceilings. This species of size has no smell, while animal size, putrifying so readily, uniformly exhales a most disagreeable and unwholesome odour; the size of potatoes, being very little subject to putrefaction, appears from experience to prove more durable in tenacity and whiteness, and, for white washing, should always be preferred to animal size, the composition of which always exhibits proofs of infectious effluvia.

According to a very curious calculation, it has been ascertained, than an acre of land, planted with potatoes will produce sufficient food for 16.875 healthy men for one meal; while an acre of wheat will not feed more than 2,745.—The expense of cultivating the potatoes is estimated at £12. 1s. and that of the wheat at £11. 15s.

FARMERS.

Now harrow your winter grain fields. Let those who will not believe till they see, try parts of their fields, for future comparison with those parts left unharrowed.

The fear of disturbing a small portion of the plants should have no effect. A light harrow, in the direction of the rows of grain, will injure but few; and these will be compensated for, ten fold. Those who sow *clover* on their grain, will find the great benefit of this operation. Even *timothy* will thrive; though some who sow it in the fall, are apprehensive of losing it. Let these, in future, sow the timothy with the clover in the spring, and harrow both in together. Timothy sown in the spring, and thus harrowed in, will not choak the wheat; as it often does when sown in the fall.

See the 2d volume of the memoirs of the Philadelphia Agricultural Society, p. 9 and 10—and 1st volume, p. 88. A writer in the 2d volume remarks;

"I remember, many years ago, reading a very well written paper on this subject. This writer, besides detailing the results of sundry experiments, gives likewise the *rationale*, in something like the following words.—"In every instance where the soil has been finely pulverized, whether by harrowing or frost, or by any other means; if heavy rains succeed and afterwards dry weather, a hard and compact crust, or cake, is formed all over the surface, in which the young plants of wheat, rye, barley or oats, stand fixed, as if growing out of a brick wall, and by pressing against their tender sides, prevent the expansion of their parts."

Look *now* over your fields, and see the justice of this description.

The writer goes on to show, that this hard *crust* prevents access of *light* and *air* to the roots; so necessary to produce vegetation. It is deprived of moisture, and full of innumerable cracks which harbor insects, to prey on the tender radicles and plants. "But by passing a light harrow over the grain in the spring, *as soon as the ground is so much hardened as to bear the horses' feet without sinking*, the young plants are relieved from that unnatural pressure; a free access is given to the light; and air to the roots. By stirring up the soil a new fermentation is produced, and the little insects are dislodged from their subterraneous habitations; all their operations disconcerted; and they left to perish by the influence of the sun and weather. By this operation, the grain, in a few days, acquires a fresh vigor, equal, if not superior to what might be produced by a top dressing." Slight not the advice of——AN OLD PRACTICAL FARMER.

Directions for raising Silk Worms, and winding the Silk.

The Silk Worm proceeds from an egg laid by the female parent, about the size of a Mustard seed, and if good is of an ashy hue, readily cracking under the nail, yielding a thick slimy matter. When Mulberry trees have leaves about the size of the thumb nail, and the season so far advanced as that no frost is to be apprehended, the eggs may be put to hatch by spreading them on a table in a warm room. In some parts of Europe we are told they are hatched by animal heat: but from experience I have always found them to hatch pretty well in a common sitting room, and that too about the time mulberry leaves begin to unfold. They generally all hatch in eight or nine days after they begin. When first hatched they are black and very much like the small black ant, and require food immediately, tho' they will live sometime without it. The leaves should be gathered when quite dry, together with the stems, that the leaves with the worms sticking to them may be the more easily removed. Strew fresh leaves over them

two or three times a day, observing to give them no more than they can easily eat, otherwise you will incumber them with litter. The common wild mulberry is found to be their best food, and the young tender leaves suit them best in their early stages; but when pretty well grown large leaves afford them more substantial food. As they increase in size they should be spread out, so as not to croud them, and should be cleared of their litter, every two or three days. A dry airy situation, removed from noise, and rather dark suits them best. They may be placed on scaffolds, one tier above another, at the distance of between two and three feet, and should be secured from rats, mice, and ants. This may be done by placing the posts which support the shelves in water, and taring them, or by suspending the shelves on tared ropes. Shelves of wickerwork are said to be the best as they readily admit air, and suffer the litter to pass off. Good crops however were made in this neighbourhood during the revolution, in tobacco houses, on shelves of the coarsest materials. Silk worms cast their skin three or four times, at which seasons they are sickly, and ought not to be disturbed; indeed handling them at any time is highly improper. The first moulting commences nine or ten days after they are hatch'd, which keeps them dull and sickly for several days; they then eat greedily for five or six days, when the second moulting comes on, and so of the rest; this however depends in a great measure on the weather and management of the worms. The sooner they moult, the better the prospect of a good crop.

Some worms become fat, do not moult, feed and crawl about while the rest remain in a lethargic state—they generally look white and oily and should, as soon as discovered, be thrown away lest they corrupt the healthy ones—others on the contrary become lean, refuse to eat, and to all appearance die of consumption. Others again especially about the time of spinning swell up, turn spotted, first on the head, then over the whole body; these should be also removed.

Silk-worms well fed will go to work in thirty-five or forty days. When fit to spin they become transparent, frequently lift up their heads, and from their mouth you may see threads of silk ; you should then place boughs of oak on their shelves, among the shrivelled leaves of which they will make their balls. The boughs ought to be cut three or four days beforehand and exposed to the sun, that their leaves may coil, and should be placed erect on the shelves. The balls are finished in three or four days, and should as soon as done, which may be known by shaking, either be wound, or the balls exposed to heat to kill the crysalis, lest they spoil the silk by piercing the ball. In fifteen or twenty days sometimes less, the crysalis becomes a fly and eats its way through the ball, the males small and frisky, the females large and dull, the very reverse of the human species. The balls which contain the males are smaller and more pointed than those of the females. They ought to be put by in pairs, a male and female alternately.—Soon after bursting their silken tombs they copulate, and should be separated after about twelve hours, the males thrown away, and the females put on paper to lay eggs for a future crop. Each female lays between three or four hundred eggs The eggs may be kept in a cool dry cellar during the summer, and wrapped in woollen laid away among clothes in the winter. The balls you intend to wind, as I before said, should be exposed to the heat of an oven after taking out the bread, or held over boiling water, which kills the crysalis and prevents their spoiling their silk by eating through the cocoons.

To wind off the silk, the cocoons must be put into hot water until the glue with which they are compacted be dissolved. Have ready twigs of some tough wood, dog wood for instance, these must be broken by twisting them for the purpose—tie three or four of them together, and with their jagged ends by frequently stirring the balls while in the water, you may easily catch up the ends of the silk, and wind it off on a common reel. It is best to pull off the loose silk before the balls are put into

the water: this silk, together with the cocoons which have been pierced by the fly can be spun like cotton, and makes what is generally called raw silk. If the balls be good they are easily wound—the only difficulty is to keep the same number of threads you begin with. For sewing silk fifteen or twenty threads are sufficient, which must be doubled, and twisted like thread, on a little wheel. The whole process then is plain and easy, requiring no capital. These are not the whims of a visionary brain; but the result of grey headed experience. Silk-worm eggs may be had in Georgetown, and specimens of silk actually raised in the place, may be seen.

Georgetown, 1812. P*****.

FRUIT TREES.

We shall have much fruit next season, if people will spend a little time in gathering the eggs of Caterpillars and Canker worms, out of their fruit trees. The proper time is between the months of January and April. The Canker worm is easily found, as the eggs are deposited in one or two leaves, and fastened to small limbs of trees, and easily discovered; but the Caterpillars are not easily found, as they are fastened to the end, or near the end of small limbs like glue. I have taken a great number of Canker-worms out of my trees already, and hope my fellow farmers will profit by this advice. J. B.

King's County, (N. Y.) Jan. 14, 1812.

SUGAR, WINE AND OIL.

Extract of a letter from a Georgia Planter, dated March 19, 1812.

"Cotton having failed, our Planters have commenced largely on *Sugar, Wine and Oil.* Mr. John Cooper of St. Simons, made last year two pipes of excellent *Red Wine. Sweet and Castor Oil* is made in great abundance on the Sea coast of Georgia—Mr. Spalding, Mr. Cooper and Mr. Grant, all made small parcels of Muscovado Sugar last year; the former will have fifty acres in Otaheite Cane this year." *Sun.*